CLAIMS

1. A method for receiving radio frequency signal, said method comprising the steps of:

- receiving a first received signal component of the radio signal using a first antenna having first properties and receiving a second received signal component of the radio signal using a second antenna having second properties, which are different from the first properties,
- processing a received signal component to produce a sampled signal component having an In-phase and a Quadrature-phase component,
- producing at least one combined signal, which is a linear combination of at least two sampled signal components,
- selecting at least one set of complex values for coefficients of the linear combination so that a quality of a combined signal corresponding to each set of coefficient values is at a certain time at least equal to a quality of the one of the sampled signal components having the best quality, and
- alternately connecting the antennas via a switching element to radio frequency means so that the received signal components are interleaving each other with respect to time and so that a first part of a certain piece of transmitted information is received with the first antenna and a second part of said piece of transmitted information is received with the second antenna.

2. A method according to claim 1, wherein the set(s) of coefficient values is/are selected using the signal-to-noise ratio as a measure of the quality of a signal.

3. A method according to claim 1, wherein the set(s) of coefficient values is/are selected by minimizing the effect of multipath propagation.

4. A method according to claim 1, wherein the polarization properties of the combined signal are adjusted.

5. A method according to claim 1, wherein the angular properties of the combined signal are adjusted.

6. A method according to claim 1, wherein the spatial properties of the first antenna and the second antenna are different.

7. A method according to claim 1, wherein the radio signal is a narrow spectrum signal comprising a sequence of symbols and said piece of transmitted information is a symbol.

8. A method according to claim 1, wherein a spread spectrum signal, corresponding to at least one sequence of data bits spread with a spreading code, is received, and said method further comprises the step of correlating the received signal components at a certain phase after the receipt of signal components with at least one local spreading code.

9. A method according to claim 8, wherein the received signal components are correlated with the local spreading code(s) before they are sampled.

10. A method according to claim 8, wherein the sampled signal components are correlated with the local spreading code(s).

11. A method according to claim 8, wherein the combined signal(s) are correlated with the local spreading code(s).

12. A method according to claim 8, wherein the spreading code consists of a certain repeated sequence of chips, which sequence lasts a certain time period shorter than half a duration of a data bit, and said piece of transmitted information comprises a first sequence of chips, which is combined with a certain data bit, and at least part of a second sequence of chips, which is combined with the same data bit, where the first sequence of chips combined with the data bit is received with the first antenna and at least part of the second sequence of chips combined with the data bit is received with the second antenna.

13. A method according to claim 12, wherein the received signal comprises Global Positioning System signals, the local spreading codes are Coarse Acquisition codes and the duration of a repeated sequence of chips is an Epoch.

14. A method according to claim 8, wherein said piece of transmitted information is a chip, which is received using at least two antennas.

15. A receiver device comprising
- at least a first antenna having certain first properties, which is arranged to receive a first signal component, and a second antenna having certain second properties,

which second properties are different from the first properties and which second antenna is arranged to receive a second signal component,

- processing means arranged to process a signal component received with an antenna to a sampled signal component having an In-phase and a Quadrature-phase component,

- combination means arranged to linearly combine sampled signal components to at least one combined signal,

- selection means arranged to select at least one set of complex values for the coefficients of the linear combination so that a quality of a combined signal corresponding to each set of coefficient values is at a certain time at least equal to a quality of the one of the first or second sampled signal components having the better quality, and

- switching means, whose first input is coupled to the first antenna and second input is coupled to the second antenna and whose output is coupled to the processing means and which is arranged to alternately couple the antennas to the processing means so that the received signal components are interleaving each other with respect to time and so that a first part of a certain piece of transmitted information is received with the first antenna and a second part of said piece of transmitted information is received with the second antenna, and in that the processing means are adjusted to process interleaving signal components.

16. A receiver device according to claim 15, further comprising second selection means, which are arranged to select based on the quality of the received signal components a constant switch position for the switching means for a certain period of time.

17. A receiver device according to claim 15, wherein the polarization properties of the first antenna and the second antenna are different.

18. A receiver device according to claim 17, wherein the first antenna is right hand circularly polarized antenna and the second antenna is a left hand circularly polarized antenna.

19. A receiver device according to claim 18, wherein the first antenna and the second antenna are arranged as a single dual sense antenna having a first feed for right hand circularly polarized operation and a second feed for left hand polarized operation.

20. A receiver device according to claim 19, wherein the dual sense antenna is a dual sense patch antenna.

21. A receiver device according to claim 17, wherein the first antenna is a first linearly polarized antenna and the second antenna is a second linearly polarized antenna.

22. A receiver according to claim 21, wherein the first antenna and the second antenna are arranged as a single dual polarized antenna having a first feed for the first linearly polarized operation and a second feed for the second linearly polarized operation, which is different from the first linearly polarized operation.

23. A receiver device according to claim 21, wherein the dual polarized antenna is a dual polarized patch antenna.

24. A receiver device according to claim 21, wherein the first antenna is a first planar inverted F antenna and the second antenna is a second planar inverted F antenna, whose direction is different from the direction of the first antenna.

25. A receiver device according to claim 21, wherein the first linearly polarized antenna is arranged to have polarization properties which are substantially orthogonal to the polarization properties of the second linearly polarized antenna.

26. A receiver device according to claim 15, wherein the angular properties of the first antenna and the second antenna are different.

27. A receiver device according to claim 15, wherein the spatial properties of the first antenna and the second antenna are different.

28. A receiver device according to claim 15, further comprising correlation means arranged to correlate with the received signal at least one local spreading code.

29. A receiver device according to claim 28, wherein said receiver device is a Global Positioning System receiver device.

30. A receiver device according to claim 15, wherein said receiver device is a mobile station arranged to receive Global Positioning System signals using the first and second antennas.